

Dimensions of the type (measured in the flesh):—

Head and body 95 mm.; tail 170; hind foot 58; ear 23.

Skull: incisor-bulla length 34.1; condylo-incisive length 30; width between outer corners of anteorbital foramina 16.2; bimeatal width 23.8; length of bulla 14.3; upper molar series 5.

*Hab.* Syrian desert. Type from Karyatein, about 34° N., 38° E. Other specimens from the Syrian desert east of the Dead Sea.

*Type.* Old female. B.M. no. 5. 7. 2. 14. Original number 84. Collected 27th March, 1905, by Douglas Carruthers. Five specimens examined.

When writing recently\* about the Muscat jerboa, I erroneously referred to the Karyatein form as *J. loftusi*, but that species is decidedly smaller, the incisor-bulla length being 31.7 mm. in a Baghdad example and 31.5 mm. in the type.

The drabby instead of buffy colour of this jerboa would seem to distinguish it sufficiently from the Egyptian *jaculus*.

XXXVIII.—*New or little-known Tipulidæ (Diptera).*—

IX. *Australasian Species.* By CHARLES P. ALEXANDER, Ph.D., F.E.S., Urbana, Illinois, U.S.A.

THE present instalment considers only species from New Zealand, supplementary to Mr. Edwards's monographic review and to papers by the writer now in press. The material described herein was received almost entirely from Dr. Campbell, Mr. Harris, and Mr. Watt, one species being from Dr. Tillyard and Mr. Philpott. I am deeply indebted to all of the above gentlemen for their kind interest in making known the remarkable crane-fly fauna of New Zealand. Except where stated to the contrary, the types are preserved in the writer's collection.

*Molophilus macrocerus*, sp. n.

General coloration pale brown; male antennæ longer than the body; halteres elongate; wings whitish subhyaline, veins pale; petiole of cell  $R_4$  very long; basal pleural appendage of the male hypopygium bifid, one arm bearing a brush of tawny hairs before the tip.

\* *Ann. & Mag. Nat. Hist.* (9) viii. p. 440 (1921).

*Male*.—Length 3.3–3.6 mm.; wing 4.5–5 mm.

Rostrum and palpi pale brown. Antennæ of the male about one-fourth longer than the body, pale brown; flagellar segments elongate-fusiform, with abundant, delicate, erect setæ. Head dark.

Pronotum pale testaceous, the scutellum obscure yellow. Mesonotum uniformly brown, the surface shiny with few conspicuous setæ. Pleura pale yellowish testaceous. Halteres very long and slender, pale brown. Legs with coxæ brownish testaceous; remainder of the legs pale brownish testaceous, the terminal tarsal segments a little darker. Wings whitish subhyaline, the macrotrichiae long but very delicate, pale brown; veins almost white; the fringe of macrotrichiae along the posterior and anal margins very elongate. Venation: *Sc* short, ending just before the fork of *Rs*; petiole of cell  $R_4$  very long, from one-third to nearly one-half *Rs*; *r* short, on  $R_{2+3}$  a short distance beyond the fork of *Rs*; basal deflection of  $Cu_1$  on  $M_{3+4}$  from one-third to two-thirds its length beyond the fork.

Abdomen brown. Male hypopygium with the basal pleural appendage appearing as a slender chitinized arm, deeply split near mid-length, the two arms but feebly divergent, one arm, immediately before the tip, bearing a dense brush of tawny hairs; apical spine blackened; apical appendage small, black, slightly curved, the apex feebly notched. Penis-guard very long and slender, straight.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, September 14, 1921 (*T. R. Harris*).

*Paratopotype*, 1 ♂, with the type; 1 ♂, October 15, 1921.

*Molophilus tanypus*, sp. n.

General coloration pale brown; antennæ short; legs very long and slender; wings whitish subhyaline, variegated with patches of dark macrotrichiae; basal deflection of  $Cu_1$  beyond the fork of *M*; abdomen pale brown, with dark brown lateral spots; male hypopygium with the mesal face of pleurite at apex bearing dense brushes of dark hairs.

*Male*.—Length 3–3.3 mm.; wing 5–5.5 mm.

Rostrum and palpi pale brownish testaceous. Antennæ short, pale brown, the scapal segments a little paler; flagellar segments cylindrical. Head dark, sparsely pruinose.

Mesonotal præscutum pale brownish testaceous, fading into yellowish laterally; posterior sclerites darker brown. Pleura yellowish testaceous, the dorsal sclerites infuscated.

Halteres elongate, testaceous, the knobs large, almost white. Legs very long and slender for an Eriopterine crane-fly, especially the posterior legs which measure approximately 12.5 mm. in total length; coxæ and trochanters obscure yellow; remainder of the legs dark brown. Wings whitish subhyaline, variegated with conspicuous patches of dark macrotrichia, giving to the wings a somewhat nebulous appearance; the more conspicuous of these blotches occupy the stigmal area, extending to the fork of *Rs*; interrupted areas at *r-m*, fork of *M*, and along vein *M*<sub>3</sub> near the base of the distal section; veins pale with dark macrotrichia. Venation: basal deflection of *Cu*<sub>1</sub> on *M*<sub>3</sub> immediately beyond the fork of *M*.

Abdomen pale brown, with a series of five dark brown lateral spots. Male hypopygium with the mesal face of the pleurites at apex provided with a dense brush of long dark hairs. Two pleural appendages, both basal in position: one chitinized, elongate, terminating in a clavate lobe, at the base of the lobe with a conspicuous shoulder that is microscopically denticulate; second appendage large, produced caudad into a flattened blackish lobe, the mesal portion very extensive, extending as a thin sheet almost to the penis-guard. Penis-guard very long, straight, tapering very gradually to the apex, subtended on either side at the base by the small inconspicuous apophyse.

*Hab.* New Zealand (Both Islands).

*Holotype*, ♂, Ohakune, altitude 2060 feet, September 23, 1921 (*T. R. Harris*).

*Paratype*, ♂, Greymouth, sea-level, September 7, 1921 (*T. R. Harris*).

*Molophilus quadrifidus*, sp. n.

General coloration brown; legs unbanded; wings grey; male hypopygium with the basal pleural appendage large, complicated, black, terminating in four arms.

*Male*.—Length 5 mm.; wing 6 mm.

Rostrum and palpi brown. Antennæ elongate, about three-fourths the length of the body; scapal segments obscure yellow, the flagellum dark brown; flagellar segments enlarged basally, attenuate apically. Head dark brown.

Mesonotal præscutum brown, with three dark brown stripes; remainder of mesonotum and the pleura dark brown. Halteres pale. Legs with the coxæ and trochanters pale; femora and tibiæ pale brown, the tarsi passing into dark brown. Wings grey, the veins brown. Venation: the

apparent  $r$  (which is probably the basal deflection of  $R_2$  as in the Pedicine crane-flies) opposite the basal deflection of  $R_5$ ; basal deflection of  $Cu_1$  about one-third its length beyond the fork of  $M$ .

Abdomen brown. Male hypopygium with the basal pleural appendage large and complicated in structure, black, produced into four arms; a blunt basal arm on the mesal face, its angle densely filled with erect yellow setæ; a powerful apical arm that is suddenly narrowed to the acute tip, the outer edge of which is microscopically denticulate; between the two arms described arises a third arm which is deeply split into two slender points, one a little stouter than the other. Apical hook of the pleurite short, strongly curved.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, in alcohol, Governor's Bay, Banks Peninsula, Canterbury, September 9, 1921 (*J. W. Campbell*).

*Paratopotypes*, 2 broken ♂♂, alcoholic; *paratypes*, 2 ♂♂, Mt. Grey, Canterbury, November 27, 1921 (*Campbell & Lyndsay*); 1 ♂, Dunedin, November 26, 1921 (*G. Howes*).

*Molophilus tillyardi*, sp. n.

General coloration reddish brown; head grey; antennæ short; legs unbanded; wings tinged with brown; abdomen dark brown; basal pleural appendage slender, bifid at apex.

*Male*.—Length 4.2 mm.; wing 5.5–5.8 mm.

*Female*.—Length 5.8 mm.; wing 5–5.3 mm.

Rostrum obscure brownish yellow; palpi dark brown. Antennæ short; sepal segments obscure brownish yellow; flagellar segments dark brown, densely clothed with white hairs. Head light grey.

Mesonotal præscutum reddish yellow, the median area darker brown; remainder of mesonotum reddish brown. Pleura dark brown. Halteres brownish yellow, the knobs dark brown. Legs with coxæ and trochanters obscure yellow; femora brownish yellow; tibiæ and tarsi brown. Wings with a faint brown tinge, the macrotrichia dark brown; veins darker brown. Venation: basal deflection of  $Cu_1$  at or close to the fork of  $M$ .

Abdomen dark brown, including the hypopygium. Male hypopygium with the basal pleural appendage slender, terminating in an acicular black rod with a microscopic spur before tip on the lateral face; apical appendage a powerful curved hook, the apex bifid, with a large black spine. Apex of pleurite slender, terminating in a slender black tubercle;

another tubercle on lateral face before apex; a third on mesal face, more basad in position; immediately basad of this a small blackened lobe with the margin microscopically denticulate.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Nelson, December 7, 1920 (*R. J. Tillyard*).

*Allotype*, ♀, Dun Mt., January 24, 1921 (*A. Philpott*).

*Paratypes*, 1 ♂, 1 ♀, Dun Mt., altitude 2000 feet, December 14, 1920; 1 ♂, 1 sex?, December 2, 1920; 1 ♀, Dun Mt., altitude 2000 feet, January 24, 1921 (*A. Philpott*); Dunedin, 1 ♂, 2 ♀♀, November 26, 1921 (*G. Howes*).

Type in the collection of the Cawthron Institute.

*Molophilus plagiatus*, sp. n.

General coloration yellow; antennæ short, pale in colour; mesonotal præscutum uniform in colour; dorsal pleurites dark brown, bordered ventrally by a silvery line; fore femora black; wings pale yellow, with a large area of black macrotrichia along the cord; less distinct seams along veins *Cu* and *Cu*<sub>2</sub>; basal pleural appendage of male hypopygium a straight rod bearing at and before the tip on the outer face two long acute spines that are perpendicular to the appendage.

*Male*.—Length 3.5 mm.; wing 4.6 mm.

*Female*.—Length about 4 mm.; wing 5 mm.

Rostrum and palpi dark brown. Antennæ short, pale brownish testaceous. Head yellow, infuscated posteriorly.

Mesonotal præscutum, scutum, and scutellum uniformly pale brownish yellow, the postnotum dark brown. Pleura with all the dorsal sclerites dark brown, the ventral margin sharply delimited, extending from the fore coxæ to the base of the abdomen, passing beneath the root of the halteres; ventral sclerites of pleura and the sternum pale with a microscopic silvery pubescence adjoining the dark margin, on the sternites passing into yellow. Halteres densely covered with brown and golden setæ. Legs with the coxæ and trochanters obscure yellow; fore femora covered with long black setæ, only the extreme bases narrowly paler; other femora yellow; tibiæ yellow, on the fore tibiæ the tips and an indistinct subbasal ring blackish; other tibiæ uniformly yellow, the tips weakly infuscated; metatarsi obscure yellow, the tips blackened; remainder of tarsi black. Wings pale yellow, with principally yellow macrotrichia; a large area of black macrotrichia along the cord; veins *Cu* and *Cu*<sub>2</sub> faintly seamed with black macrotrichia; less distinct areas on

veins  $R_{2+3}$ ,  $R_5$ , and  $M_3$  before the tips and on vein 2nd  $A$  near the base. Venation: basal deflection of  $Cu_1$  in alignment with the basal deflection of  $M_3$ .

Abdomen dark brown, including the hypopygium; lateral line narrowly darker brown; sternites paler, except laterally. Male hypopygium with the pleurites terminating in small, black, apical hooks; basal pleural appendage a straight black rod, the outer face at and before the tip with two perpendicular acute spines, with smaller denticles filling the space between; distal pleural appendage single, a straight rod that is rather deeply bifid at apex, the outer arm stouter than the slender, weakly arcuate inner or mesal arm.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 15, 1921 (*T. R. Harris*).

*Allotopotype*, ♀, October 7, 1921.

*Paratopotypes*, 5 ♂♂, October 7, 1921; 1 ♂, October 14, 1921; 3 ♂♂, October 17, 1921; 3 ♂♂, October 19, 1921; 5 ♂♂, 1 ♀, October 27, 1921.

*Molophilus plagiatu*s is related to *M. cruciferus*, Alexander, and *M. pulcherrimus*, Edwards, but is a very distinct species.

*Molophilus sublateralis*, sp. n.

*Male*.—Length about 3 mm.; wing 3·3 mm.

*Female*.—Length about 4·5 mm.; wing 4·4 mm.

Generally similar to *M. plagiatu*s, sp. n., differing as follows:—

Antennal scape dark brown, the flagellum very pale testaceous yellow. Head dark brown. Mesonotal præscutum obscure yellow medially, the anterior margin broadly dark brown, this area sending caudad two conspicuous, sublateral, brown stripes that cross the suture and suffuse the centres of the scutal lobes, the extreme anterior lateral margin of the præscutum likewise darkened, the space between this and the sublateral brown stripe obscure testaceous yellow; postnotum pale, a little infuscated near the root of the halteres. Pleura with the dark brown stripe narrower, the dorsal portion being much paler than the deep brown ventral portion, this latter passing immediately beneath the root of the halteres; ventral pleurites and the sternites silvery white. Fore femora covered with dense black setæ as in *plagiatu*s; fore tibiæ and tarsi likewise dark-coloured. Wings grey, the costal margin broadly and conspicuously light yellow; small dark patches of macrotrichia much more abundant and more clearly defined than in *plagiatu*s, these

dark areas as follows:—At origin of *Rs*; at stigma, continued caudad along cord; conspicuous seams on veins *Cu*, *1st A*, and *2nd A*, except at the tips, which are broadly white; other areas along *M* near the fork; on  $R_{2+3}$  before the tip; on  $R_4$  beyond mid-length; scattered along most of the length of  $R_5$ ; on  $M_{1+2}$  near mid-length; on  $M_3$  near two-thirds the length, and on the distal section of  $Cu_1$  near mid-length; tips of all the longitudinal veins pale except  $R_5$ , where the dark setæ continue to the margin. Male hypopygium with the basal pleural appendage on outer face before tip bearing three powerful spines, the more apical one smallest, the more basal spine largest, these spines nearly perpendicular to the appendage; apical pleural appendage sinuous, rather deeply bifid at tip, the arms divergent, the lateral arm longer but of about the same diameter as the mesal or inner arm.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 7, 1921 (*T. R. Harris*).

*Allotopotype*, ♀, October 15, 1921.

*Amphineurus molophilinus*, sp. n.

General coloration dark, the entire body very densely covered with long, whitish, somewhat flattened setæ; male antennæ about one-half the length of the body; wings rufous brown, spotted with darker brown; cell  $R_2$  sessile as in *Molophilus*; cell *1st M*<sub>2</sub> closed.

*Male*.—Length 6 mm.; wing 7.4 mm.

Rostrum and palpi black. Antennæ moderately elongate, approximately one-half as long as the body; scape obscure yellowish brown; flagellum black, the segments with an abundant erect pubescence. Head dark grey, provided with abundant whitish setæ.

Mesonotal præscutum light brown, with three darker brown stripes; entire surface except the broad median stripe almost concealed by abundant white appressed setæ; remainder of mesonotum blackish, sparsely pruinose. Pleura dark, the colour practically concealed by abundant, white, appressed setæ; remainder of mesonotum blackish, sparsely pruinose. Pleura dark, the colour practically concealed by a great abundance of long white setæ on all the sclerites. Halteres pale. Legs with the trochanters concolorous with the pleura; remainder of the legs brownish black, the femoral bases narrowly and indistinctly paler. Wings with a strong rufous-brown tinge, spotted along the veins with dark brown, including areas at the origin of *Rs*,

along the cord and outer end of cell 1st  $M_2$ , and along the wing-margin at the ends of all the veins; veins brown, darker in the infuscated areas; the colour is produced by very abundant macrotrichiaë that cover the entire wing. Venation:  $R_s$  ending in cell  $R_2$  as in *Molophilus*;  $r$  on  $R_2$  about its own length beyond the fork of  $R_s$ ; cell 1st  $M_2$  closed; basal deflection of  $Cu_1$  one-third its length or less before the fork of  $M$ .

Abdominal tergites dark, the colour almost concealed by dense white setaë; sternites similar, but the apical margins of the segments appear broadly whitish, due to the greater abundance of setaë. Male hypopygium with a median dorsal (the apparent ventral) style; on either side of this a deeply bifid, slender appendage, the lateral arm shorter, sinuous, the apex acutely pointed; mesal arm longer, decussate across the mid-line, dilated near the ends, the extreme tips of each produced into an acute black spine.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Dunedin (Opoho), Otago, October 24, 1921 (*M. N. Watt*).

*Paratopotypes*, 1 ♂, November 8, 1921; 1 ♂, November 20, 1921 (*M. N. Watt*); 3 ♂♂, Flagstaff Hill, Dunedin, open country, December 9-10, 1921 (*G. Howes*).

"In scrub."

*Amphineurus molophilinus* is a very distinct fly that suggests in several respects a species of *Molophilus*, but has the wing-membrane densely covered with macrotrichiaë and is to be placed in *Amphineurus*.

#### *Amphineurus harrisi*, sp. n.

Antennæ of male elongate; wings subhyaline; cell  $R_2$  petiolate; cell 1st  $M_2$  open; cell  $M_3$  sessile or nearly so; male hypopygium with the ninth tergite terminating in two parallel spines; basal pleural appendage branched beyond mid-length; penis-guard terminating in a long slender spine.

*Male*.—Length about 4.5 mm.; wing 6.5 mm.

Rostrum light brown; palpi dark brown. Antennæ elongate, a little shorter than the body; flagellum appearing subnodose as in the *insulsus* group of species; flagellum segments elongate-fusiform, except at the distal end with abundant erect setaë; scapal segments brownish testaceous; basal flagellar segments indistinctly bicolorous, dark brown, the apex narrowly pale; terminal flagellar segments uniformly brownish black. Head grey.



Mesonotum rather uniform light brown, the præscutum pale laterally, but without distinct markings. Pleura whitish testaceous; setæ on body delicate, black, not abundant. Halteres pale brown. Legs with the coxæ and trochanters concolorous with pleura; remainder of the legs uniformly brown, the tarsal segments darker. Wings subhyaline; a faint brown cloud at *r*; membrane and veins with rather numerous macrotrichia, congregated into a more dense patch at the fork of *M*; veins brown. Venation: cell *R*<sub>2</sub> petiolate; *r* on *R*<sub>2</sub> about two and one-half times its length beyond the fork; cell 1st *M*<sub>2</sub> open by the atrophy of *m*; cell *M*<sub>3</sub> very short-petiolate to sessile, the petiole much shorter than *r-m*.

Abdomen uniform light brown. Male hypopygium with the ninth tergite small, chitinized, with a V-shaped notch, the lobes acute, parallel, directed caudad; basal pleural appendage slender, the tip gently curved, a small blunt lobe just beyond mid-length; distal appendage mitten-shaped, deeply cleft at apex, the lateral spine (thumb) acute. Penis-guard dilated at base, the dorsal margin weakly spinous, the apex produced dorsad into a very long slender spine, the acute tip blackened. Apex of pleurite terminating in a small, spinulose, blackened knob.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 10, 1921 (*T. R. Harris*).

*Amphineurus harrisi* is named in honour of the collector, Mr. T. R. Harris, to whom I am very greatly indebted for many crane-flies from New Zealand. It belongs to the group of *A. insulsus* (Hutton), as does *A. horni*, Edwards, and the two species next described. *A. horni* has a wide range in New Zealand, from Ohakune in the North Island to Dunedin in the southern part of the South Island.

*Amphineurus recurvans*, sp. n.

*Male*.—Length about 4.2 mm.; wing 6.3–6.5 mm.

Generally similar to *A. harrisi*, differing as follows:—

Size of body slightly smaller. Pronotal scutellum light yellow. Wings with cell *M*<sub>3</sub> petiolate, the petiole a little more than one-half the basal deflection of *Cu*<sub>1</sub>. The holotype has the wing narrower and more greyish than the Otipara type. In the latter specimen, the wings are tinged with pale brown. Male hypopygium with the ninth tergite appearing as two flattened black lobes, lying parallel, their tips broadly rounded, the lobes separated from one another

only by a deep and narrow U-shaped notch. Basal pleural appendage elongate, the tips very strongly recurved to appear like a shepherd's crook; distal pleural appendages two in number, one a flattened black blade that bears on its lateral angle a long, divergent, black spine (thumb); the second apical appendage is a slender pale rod that is feebly bent near mid-length. Gonapophyses appearing as two parallel blades that suggest in appearance a bird, the beak being the terminal black spine, the dorsal margin or back being microscopically toothed.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Greymouth, sea-level, September 7, 1921 (*T. R. Harris*).

*Paratype*, 1 ♂, alcoholic, Otira Gorge, January 10, 1920 (*J. W. Campbell*); 1 ♂, Kaituna, Banks Peninsula, Canterbury, September 11, 1921 (*J. W. Campbell*); 2 ♂♂, Charteris Bay, Canterbury, November 12, 1921 (*J. W. Campbell*).

*Amphineurus otagensis*, sp. n.

*Male*.—Length 3.8–4 mm.; wing 6–6.5 mm.

Generally similar to *A. harrisi*, differing as follows:—

Average size of body a little smaller. Antennæ of male considerably longer than the body. Basal deflection of  $Cu_1$  before the fork of  $M$ , the distance a little greater than the basal deflection of  $M_{1+2}$ ; cell  $M_3$  petiolate, the petiole only a little shorter than the basal deflection of  $Cu_1$ . Male hypopygium with the ninth tergite somewhat as in *A. recurvans*, consisting of two straight rods that are feebly divergent; these rods are relatively very long and slender, the tips subacute; space separating the rods U-shaped. Pleurites produced into elongate, setiferous, digitiform lobes as in the genus. Basal pleural appendage a long, slender, acicular rod, very gently curved, tapering gradually to the acute blackened apex; apical pleural appendages two, one slender, rod-like, weakly sinuous, the second a large flattened blade that bears the usual lateral divergent spine (thumb), and, in addition, a smaller, more obtuse spine near the mid-distance to the apex, lying in the angle of the thumb; apex of this blade acute, blackened. Gonapophyses a little shorter than the penis-guard, tapering to the acute blackened tips, guard relatively slender, straight, on either side produced into a somewhat flaring wing.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Dunedin (Waitati), Otago, October 24, 1921 (*M. N. Watt*).

*Paratopotypes*, 2 ♂♂; 3 ♂♂, 1 ♀, November 5, 1921; 2 ♂♂, 3 ♀♀, one pair *in copula*, November 26, 1921 (*G. Howes*); *paratype*, 1 ♀, Waipori, December 5, 1921 (*G. Howes*).

"Beaten from fern near stream." Types associated with *A. horni*, Edwards.

*Gnophomyia triton*, sp. n.

General coloration grey; antennæ black; mesonotal præscutum with three plumbeous-grey stripes, the median stripe divided; legs dark brown, the coxæ, trochanters, and femoral bases obscure yellow; tips of the femora and tibiæ black; wings with a blackish suffusion in the apical and posterior cells; *r* on  $R_2$  close to the fork; male hypopygium with the pleural appendage elongate, tapering gradually to the simple acute apex.

*Male*.—Length 5·8–6 mm.; wing 7·2–7·3 mm.

Rostrum and palpi black. Antennæ black; basal flagellar segments cylindrical, subterminal segments more oval; last segment abruptly smaller. Head grey, lighter-coloured adjoining the inner margins of the eyes.

Mesonotal præscutum grey, very light grey laterally; three darker plumbeous-grey stripes, the median stripe indistinctly divided by a darker line; remainder of the mesonotum grey. Pleura and sternum clear grey. Halteres pale. Legs with the coxæ and trochanters obscure yellow; femora brown, yellow basally, the apices narrowly blackened; tibiæ brown, the tips black; tarsi black. Wings with a faint blackish suffusion in the cells distad of the cord and caudad of vein *Cu*; a still darker suffusion along the cord; stigma conspicuous but small, elongate, blackish; veins dark brownish black. Venation:  $Sc_1$  ending just before the end of  $Rs$ ,  $Sc_2$  longer than  $Sc_1$  and located at its tip; *r* on  $R_2$  immediately beyond the fork; basal deflection of  $Cu_1$  just beyond the fork of *M*.

Abdomen brownish grey; sternites clearer grey, in some cases the sternum obscure yellow, the caudal margin ringed with paler. Male hypopygium with the pleural appendage elongate, tapering gradually to the simple acute apex, unarmed at base. Penis-guard trifold, before the apex being split into two needle-like divergent horns, from the centre of which projects the subequal apex of the guard. Gonapophyses flattened, projecting beyond the guard, the apex with a deep V-shaped notch, the lobes formed being obliquely truncated.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Greymouth, sea-level, September 7, 1921  
(*T. R. Harris*).

*Paratopotypes*, 4 ♂ ♂, 1 teneral.

*Gnophomyia triton* belongs to the same group as *G. flavopygialis*, Alex. (see discussion, *Ann. & Mag. Nat. Hist.* ser. 9, vol. ix. p. 150, 1922).

*Atarba (Atarba) viridicolor*, sp. n.

General coloration yellowish green; antennæ elongate; wings greenish yellow; *Sc* long; basal deflection of *Cu*<sub>1</sub> near mid-length of cell 1st *M*<sub>2</sub>.

*Female*.—Length 7.5 mm.; wing 7.2 mm.

Rostrum pale greenish yellow; palpi pale brown, the base greenish. Antennæ elongate, if bent backward extending about to the base of the third abdominal segment; scapal segments testaceous, tinged with green; basal flagellar segment testaceous; remaining flagellar segments black. Head pale greenish testaceous.

Mesonotum pale fawn-yellow, tinted with green, especially near the wing-root. Pleura similar to the notum, but very deeply tinged with light green—this colour undoubtedly very intense in fresh specimens. Halteres with the stem green, the knobs paler. Legs with the coxæ and trochanters light green; femora and tibiæ brownish yellow, the former tinged with green near base; tarsi gradually darkening to brownish black. Wings pale greenish yellow subhyaline; stigma faintly indicated; veins brown, tinged with green, deepest along costa. Venation: *Sc* long, *Sc*<sub>1</sub> ending a short distance before the fork of *Rs*, *Sc*<sub>2</sub> some distance from its tip, *Sc*<sub>1</sub> alone about two-thirds the basal deflection of *Cu*<sub>1</sub>; cell 1st *M*<sub>2</sub> elongate-pentagonal, gently widened distally, the veins beyond it rather long and slender; basal deflection of *Cu*<sub>1</sub> at or just beyond mid-length of the caudal face of the cell.

Abdomen pale brownish green, including the base of the ovipositor. Elongate tergal valves of the ovipositor straight, gently upcurved at their tips, green at base, passing into dark horn-colour.

*Hab.* New Zealand (North Island).

*Holotype*, ♀, Ohakune, altitude 2060 feet, October 11, 1921 (*T. R. Harris*).

*Paratopotype*, ♀, October 23, 1921.

*Limnophila maorica*, sp. n.

General coloration reddish brown; antennæ of male nearly as long as body; wings with a faint brown tinge; stigma and a faint seam along *r-m* darker brown; *r* near tip of  $R_1$ ;  $R_{2+3}$  short; basal deflection of  $Cu_1$  near one-fourth the length of cell 1st  $M_2$ ; male hypopygium with a long slender spine at base of dorsal face of pleurite.

*Male*.—Length 4.6–5 mm.; wing 6.3–6.5 mm.

*Female*.—Length 6.3 mm.; wing 7.3 mm.

Rostrum obscure yellow; palpi brownish black. Antennæ of the male elongated, only a little shorter than the body; scapal segments obscure brownish yellow; flagellum black, the segments elongate-cylindrical. Head dark brown, the occiput and genæ more rufous.

Mesonotum uniform reddish brown, the præscutal interspaces with a few erect black setæ. Pleura obscure brownish yellow. Halteres elongate, dark brown. Legs with the coxæ and trochanters obscure brownish yellow; femora dark brown, the bases testaceous; remainder of the legs brownish black; tibial spurs small, reddish. Wings with a very faint brown tinge; stigma oval, pale brown; a pale brown seam along *r-m* and the deflection of  $R_{4+5}$ ; veins dark brown with abundant macrotrichiæ; a shiny black callus on the wing-root. Venation: *Sc* long,  $Sc_1$  ending beyond the fork of  $R_{2+3}$ ,  $Sc_2$  about one and one-half times its length from tip; *Rs* long, strongly angulated at origin;  $R_{2+3}$  short, approximately equal to the deflection of  $R_{4+5}$ , this length somewhat variable; *r* about its own length from the tip of  $R_1$ ; inner ends of cells  $R_3$ ,  $R_5$ , and 1st  $M_2$  in oblique alignment; petiole of cell  $M_1$  about equal to or longer than the second section of  $M_{1+2}$ ; *m* with macrotrichiæ, arcuated, usually about one-half longer than the outer deflection of  $M_3$ ; cell 1st  $M_2$  elongate; basal deflection of  $Cu_1$  near one-fourth the lower face of cell 1st  $M_2$ ; arculus broken.

Abdominal tergites dark brown, the basal half or less indistinctly paler; sternites obscure brownish yellow, the apices narrowly darker; hypopygium obscure yellow. Male hypopygium with the pleurites slender, the apex of each produced into a small chitinized point; two apical pleural appendages, the outer terminating in a slender chitinized point; at the base of the pleurites on the dorsal face a conspicuous chitinized rod that extends caudad into an acicular, feebly curved point. Penis-guard and gonapophyses fused into a conspicuous median structure. Anal tube distinct. Ovipositor with the valves elongate, the tergal valves acicular.

*Hab.* New Zealand (Both Islands).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 1, 1921 (T. R. Harris).

*Allotype*, ♀, Greymouth, sea-level, September 7, 1921 (T. R. Harris).

*Paratopotypes*, 10 ♂♂, September 21 to October 11, 1921; *paratype*, 1 ♂, with the allotype; 3 ♂, 1 ♀, Dunedin, November 26, 1921 (G. Howes).

In its general appearance, *Linnophila maorica* somewhat suggests *L. delicatula*, Hutton, a very different fly.

*Linnophila maorica bispina*, subsp. n.

Very similar to the typical form, but the basal pleural appendage of the male hypopygium, instead of being a simple, very elongate rod, is shorter, stouter, at the tip split into two branches, the lateral branch short and straight, the mesally directed spine nearly four times the lateral spine, gradually narrowed to the acute apex where it is strongly curved.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Greymouth, sea-level, September 7, 1921 (T. R. Harris).

*Linnophila mirifica*, sp. n.

General coloration light brown; mesonotal præscutum with three darker brown stripes; femora with conspicuous erect setæ on ventral face; wings with a pale brown tinge; stigma elongate, darker brown; cell  $M_1$  present, small; male hypopygium comparatively large and complicated in structure; eighth sternite terminating in a comb of blackened teeth.

*Male*.—Length about 4.8 mm.; wing 6.2 mm.

Rostrum dark grey-pruinose; palpi black. Antennæ broken. Head black with a sparse grey pubescence anteriorly, on the posterior part of the vertex more yellowish.

Pronotum almost white. Mesonotal præscutum light brown with three darker brown stripes; remainder of mesonotum badly crushed, the postnotum grey-pruinose. Pleura with a pale pollen, more pruinose posteriorly. Halteres pale. Legs with the coxæ yellow, the fore coxæ infuscated; trochanters pale; femora light brown, with long, conspicuous, erect setæ on the ventral face; tibiæ and tarsi brown. Wings with a pale brown tinge, the stigma elongate, darker brown; veins black. Venation:  $Sc$  long,  $Sc_2$  much longer than  $Sc_1$  and ending opposite the fork of  $R_s$ ;  $r$  faint, on  $R_2$  about one and one-half times its length beyond the fork;  $R_s$  in alignment with  $R_{2+3}$ ;  $R_{2+3}$  a little longer than

the deflection of  $R_{4+5}$ ; veins  $R_2$  and  $R_3$  generally parallel to the margin; inner ends of cells  $R_3$ ,  $R_5$ , and 1st  $M_2$  in alignment;  $r-m$  gently arcuate; cell  $M_1$  small, less than one-half its petiole; cell 1st  $M_2$  relatively small, the basal deflection of  $Cu_1$  near three-fifths its length; arculus unbroken.

Abdomen dark brown, the sternites a little paler; hypopygium obscure yellow. Male hypopygium unusually large and complicated in structure for a member of this genus. Ninth tergite terminating in two slender straight rods that lie parallel to one another. Pleurites produced caudad into slender black rods that are expanded at their tips and here weakly hairy; dorsad of these rods on either side arises a very long, pale, curved appendage, directed caudad, the tips mesad, the extreme apices blackened. Ninth sternite appearing as two subglobular setiferous lobes. Eighth sternite tapering to the apex, which bears a conspicuous comb of blackened teeth.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 10, 1921 (*T. R. Harris*).

*Gynoplistia concava*, sp. n.

General coloration grey-pruinose, the præscutum with three brown stripes; antennæ 17-segmented; femora yellowish-brown with a narrow, dark brown, subterminal ring; wings with a strong yellow tinge and conspicuous dark brown seams along the cord and at the origin of  $R_5$ ; abdominal tergites brown, the eighth tergite blackened; male hypopygium with the ninth tergite bearing a broad median lobe whose margin is gently concave.

*Male*.—Length 14.5–15 mm.; wing 12.5–13.4 mm.

*Female*.—Length 18 mm.; wing 14.5 mm.

Rostrum brown, sparsely pruinose; palpi dark brown. Antennæ 17-segmented, the formula being 2+2+7+6 or in cases 2+2+8+5, the tenth flagellar segment sometimes being pectinate; scapal segments reddish brown; basal segments of flagellum pale, the remainder dark brown, the pectinations black; terminal flagellar segment elongate, approximately twice as long as the subterminal segment; longest pectination (segment 8) about two and three-fourths the segment. Head dark-coloured, dull grey-pruinose.

Mesonotal præscutum grey with three brown stripes, the lateral stripes brighter brown and more distinct than the median vitta; pseudosutural foveæ deep horn-colour;

remainder of mesonotum grey-pruinose. Halteres pale. Legs with the coxæ brown, sparsely pruinose; trochanters obscure yellow; femora light yellowish brown with a narrow but distinct dark brown subterminal ring; tibiæ and metatarsi pale brown, the tips blackened; remainder of the tarsi black. Wings with a strong yellow tinge, cells *C* and *Sc* more brownish yellow; a conspicuous dark brown pattern distributed as follows: a quadrate blotch at origin of *Rs*, not attaining *M*; stigmal area oval with a conspicuous caudal extension along the cord to cell 1st *M*<sub>2</sub>; brown seams at *m* and on the basal deflection of *Cu*<sub>1</sub>; a brown spot on vein 1st *A* near two-thirds the length; wing-tip very faintly darkened; no dark mark at fork of *M*<sub>1+2</sub>; veins black. Venation: *Rs* very long, spurred at origin; *r* on *R*<sub>2</sub> from just beyond mid-length to two-thirds the length; petiole of cell *M*<sub>1</sub> longer than the second section of *M*<sub>1+2</sub>; basal deflection of *Cu*<sub>1</sub> near two-thirds the length of cell 1st *M*<sub>2</sub>.

Abdomen uniformly brown; eighth segment blackened; hypopygium obscure brownish yellow. Male hypopygium similar to that of *G. subfasciata* Walker, differing as follows: ninth tergite with a low broad median lobe, the caudal margin of which is gently concave. Black spinulose arms on mesal face of pleurites not so regularly globose, the small spinulose lobe near its base larger. Outer pleural appendage with the apex and subterminal spine shorter, the apex with more distinct denticles; inner pleural appendage with the elongate apex much more slender, tapering gradually to the subacute apex.

The female is full-winged; abdominal tergites brownish grey; ovipositor with the valves elongate.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 3, 1921 (*T. R. Harris*).

*Allotype*, ♀, Taihape, October 12, 1921 (*T. R. Harris*).

*Paratypes*, ♂, with the allotype; 4 ♀ ♀, October 22, 1921.

Allied to *G. subfasciata*, Walker, but very distinct in the structure of the hypopygium and the dark brown subterminal rings on the femora.

#### *Gynoplistia nebulipennis*, sp. n.

General coloration deep reddish brown; antennæ 16-segmented; head black; pleura very heavily and extensively silvery-white; halteres pale yellow; wings subhyaline with a very heavy, dark brown pattern, the apex broadly suffused



with darker; male hypopygium with the apex of each pleurite produced into a short blade; inner pleural appendage feebly bifid at apex.

*Male*.—Length 8.6–9 mm.; wing 8.5–9.4 mm.

Rostrum and palpi dark brown. Antennæ black; 16-segmented, the formula being  $2+2+9+3$ ; pectination of the third flagellar segment inserted at a slightly different plane from that of the basal two and the distal flagellar segments; flagellar pectinations of moderate length. Head black, sparsely brownish-grey pruinose anteriorly.

Mesonotal præscutum deep reddish brown with three indistinct darker brown stripes, the surface subshiny though covered with a sparse microscopic pubescence; scutum brown, the cephalic margin of the lobes blackened; scutellum and postnotum obscure yellowish brown, somewhat shiny. Pleura with a very heavy silvery-white microscopic pubescence that appears like a bloom; propleura dark brown, sending a narrow longitudinal stripe caudad on to the mesepisternum; mesosternum dark; a narrow, longitudinal, brown line on sides of mesosternum immediately dorsad of mid-coxæ. Halteres pale yellow. Legs with the coxæ concolorous with the pleura; trochanters brownish yellow; femora dark brown, the bases more reddish, more extensive on the middle and posterior femora; tibiæ and tarsi black, the posterior tibiæ paler with black tips. Wings subhyaline, the base and cells *C* and *Sc* brownish yellow; a very heavy dark brown pattern covers approximately one-half the wing-surface, including the following general areas: a large blotch at origin of *Rs* not attaining vein *M*; stigmal blotch sending a broad seam along the cord, interrupted only in the centre of cell 1st *M*<sub>2</sub>; wing-apex broadly darkened leaving pale areas only in the mid-third of cell *R*<sub>2</sub>, the second quarter of *R*<sub>3</sub>, and indistinct pale blotches in the centres of cells *R*<sub>5</sub>, 2nd *M*<sub>2</sub>, and *M*<sub>3</sub>, the two latter more extensive; cell *M* is largely suffused because of the unusually broad dark seams along veins *M*, *Cu*, and *Cu*<sub>2</sub>; a large dusky suffusion before mid-length of cell *Cu* and near the outer end of cell 1st *A*; other veins more or less seamed with dusky; veins dark. Venation: cell 2nd *R*<sub>1</sub> very small, *r* being at tip of *R*<sub>1</sub> and about three times its length from the tip of *R*<sub>2</sub>; petiole of cell *M*<sub>1</sub> about three times *m*; basal deflection of *Cu*<sub>1</sub> near two-thirds the length of the lower face of cell 1st *M*<sub>2</sub>. The right wing of the type shows a remarkable malformation of the veins, *R*<sub>4+5</sub> bending caudad and fusing with the third section of *M*<sub>1+2</sub> (petiole of cell *M*<sub>1</sub>) for almost the entire length of the latter.

Abdominal tergites dark brown, the intermediate segments

with an obscure yellow area at base on either side of the median line; hypopygium shiny yellow; sternites obscure yellowish brown, the subterminal segments faintly darker. Male hypopygium with the pleurites stout, the apical angle produced caudad into a conspicuous pale blade. The mesal apical angle of the pleurite also produced into a triangular point; two pleural appendages, the inner one slender, curved at the apex which is feebly bifid and blackened. Gonapophyses appearing as slender blades that are directed caudad, the tips slightly mesad.

*Hab.* New Zealand (South Island).

*Holotype*, ♂, Greymouth, sea-level, September 6, 1921 (T. R. Harris).

*Paratopotype*, ♂.

*Macromastix atridorsum*, sp. n.

General coloration obscure yellow; dorsum of præscutum black with four greyish-plumbeous stripes; antennæ short; wings subhyaline; stigma pale brown; veins *Sc* and *R* sub-coalescent distally; *r* lacking; basal deflection of *Cu*<sub>1</sub> close to inner end of cell 1st *M*<sub>2</sub>; abdominal tergites black, the basal sternites obscure yellow.

*Male*.—Length about 8 mm.; wings 10 mm.

Frontal prolongation of the head brown; nasus lacking; palpi brownish black. Antennæ short, black, the basal scapal segment brownish testaceous. Front yellowish pollinose; remainder of dorsum brownish grey.

Pronotum brown. Mesonotal præscutum black with four dark grey-plumbeous stripes, the extreme lateral margins, humeral region and centre of the V-shaped suture obscure yellowish; scutal lobes black, the posterior and lateral margins fading into obscure yellow; scutellum and post-notum obscure yellow, the posterior margin of the latter narrowly infuscated. Thorax glabrous. Pleura obscure yellow; mesosternum infuscated. Halteres brown, the extreme base of the stem yellow. Legs with the coxæ yellow, the base of the fore coxa infuscated; trochanters yellow; femora dark brown, the bases obscure yellow; remainder of the legs brownish black; legs long and slender. Wings subhyaline; stigma pale brown, filling cell *Sc*<sub>1</sub> and the distal half of cell *R*<sub>1</sub>; veins brownish black. Venation: *Sc*<sub>1</sub> present; veins *Sc* and *R* almost completely coalesced on their distal half; *Rs* feebly angulate before mid-length; *r* completely lacking; cell 1st *M*<sub>2</sub> almost quadrangular,

widest basally; *m-cu* immediately beyond the fork of *M*, so the basal section of *M*<sub>3</sub> is almost lacking; petiole of cell *M*<sub>1</sub> equal to or a little shorter than the second section of *M*<sub>1+2</sub> and in alignment with it; cell 2nd *A* broad.

Abdomen with the basal tergite dark brown; remaining tergites black; sternites obscure yellow, segments 6 to 9 and the caudal margin of 5 infuscated. Male hypopygium inverted as in the genus, the ninth tergite occupying a ventral position, consisting of two rounded black lobes that are separated by a deep U-shaped notch.

*Hab.* New Zealand (North Island).

*Holotype*, ♂, Ohakune, altitude 2060 feet, October 10, 1921 (*T. R. Harris*).

### XXXIX.—Two new Jerboa-rats (*Notomys*).

By OLDFIELD THOMAS.

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AMONG the mammals collected by the late Mr. W. Stalker in the neighbourhood of Alexandria, Northern Territory of Australia, is a nice series of a jerboa-rat from Alroy, which in my account of the collection was recorded as *Notomys mitchelli*\*—a determination which was accepted in my recent notes on the genus *Notomys* †.

There appeared, however, to be some doubt as to what the true *Notomys mitchelli* of the Lower Murray River was, and I appealed to Mr. Troughton at Sydney for information about the type, while in the meantime the characters of the species were drawn up from the Alroy series.

Mr. Troughton now tells me that he has examined the incisors of the original specimens of "*Dipus mitchelli*," and finds that they are distinctly orthodont, not opisthodont as in our northern specimens and as stated in my description of the species.

Since writing the paper on *Notomys*, I have had lent me by the Liverpool Museum a number of Australian Muridæ received by them from Mr. Gould, and among these there are two jerboa-rats (nos. 246 and 246 *a*) from the Gawler

\* P. Z. S. 1906, p. 539.

† Ann. & Mag. Nat. Hist. (9) viii. p. 536 (1921).